

## CELL GROWTH SUBSTRATES WITH TETHERED CELL GROWTH EFFECTOR MOLECULES

### Abstract of the Invention

*Described*  
~~Disclosed~~ are compositions with tethered growth effector molecules, and methods of using these compositions for growing cells and tissues. Growth effector molecules, including growth factors and extracellular matrix molecules, are flexibly tethered to a solid substrate. The compositions can be used either *in vitro* or *in vivo* to grow cells and tissues. By tethering the growth factors, they will not diffuse away from the desired location. By making the attachment flexible, the growth effector molecules can more naturally bind to cell surface receptors. A significant feature of these compositions and methods is that they enhance the biological response to the growth factors. The ~~new~~ method also offers other advantages over the traditional methods, in which growth factors are delivered in soluble form: (1) the growth factor is localized to a desired target cell population; (2) significantly less growth factor is needed to exert a biologic response. This method can be used as a means of enhancing the therapeutic use of growth factors *in vivo* and of creating surfaces which will enhance *in vitro* growth of difficult-to-grow cells such as liver cells.